



Clear Lake Blue Ribbon Committee

Dredging Boating Ways and Stream Mouths of Clear Lake

5.3.2023

Project Title: Dredging Boating Ways and Stream Mouths of Clear Lake

Project Description: The County of Lake (County) seeks to acquire funds to design and perform multiple dredging projects around the public access areas of Clear Lake. The goals of these dredging projects are multi-benefit; to increase the navigable depth, reduce nutrient sediment bars / bioturbation potential, and improve fish passage at various stream mouths around Clear Lake.

The County will create and distribute an RFP, then complete contracting with a qualified and experienced engineering consultant and/or company. The contractors will prepare bathymetric surveys, water and material testing requirements, dredge calculations, project design, improvement plans, permit applications, perform engineering assistance during construction, and preparation of improvement plans and specifications to be used as the basis for solicitation of construction bids. A contractor approved to dredge waterways will then be on-boarded to complete implementation of the project and disposal of material.

Benefits:

- Removing sediment nutrients from Clear Lake (high phosphorus loaded sediments fuel HABs and contribute to internal loading)
- Improve fish passage for creeks by removing barriers at tributary mouths
- Improve recreational and emergency access to the Lake by removing sediment, allowing parks jurisdiction to apply for ramp extension grants and implement those projects

Potential Proposed Areas:

- Rodman Slough / Kelsey Creek
- 3rd / 5th St Ramp
- County Park Ramp
- Keeling Park Ramp
- Clearlake Oaks Ramp
- Redbud Ramp
- Cole Creek (Clear Lake State Park)
- (potential for other stream mouths)

*Target dredge depth of -4.5ft Rumsey for the boat ramps (selected areas dependent on bathymetric survey results and project management guidance)

Project Components:

There are two main project components, each with associated subcomponents. Firstly, project management which sets up the project, obtains required permits, reports, studies, and helps with the development of an RFQ to solicit qualified contractors that will be conducting the actual dredging work. Secondly, the dredging implementation portion includes selected contractor will remove sediment and dredge at selected sites to established depths and dispose of recovered material appropriately.

- Project Manager (includes permitting, required technical studies, cultural reports, sedimentation plan, archeological report, bathymetric surveys) ~40% of project costs
- Dredging Implementation (includes material removal and disposal) 60% of project costs

Additional Projects/Benefits:

Dredged boating lanes will allow the County and Cities to apply for grant funding to extend boat ramps through the California Division of Boating and Waterways. Currently, many boat ramp extensions are not possible due to higher lakebed elevations just outside the ramp drop offs where material has deposited from boating, runoff, and wave action.

Dredging and extending boat ramps have additional multi-benefits to recreation including reduced bioturbation in the littoral zone. This is due to the reduced turbidity props cause over a cement boat ramp compared to the natural lake bottom.

Quantifying Project Success:

There are many ways to quantify success of this project, including tangible improved navigable depths, estimated nitrogen / phosphorous removed from Clear Lake, and visible accounts of improved hitch spawning runs.

The Lucerne dredging project for example will remove an estimated ~2 tons of phosphorous and ~0.4 ton of Nitrogen by dredging 2500 cu yards of sediment. The annual load limit established by the Water Resources Control Board for Clear Lake regarding phosphorous is 95 tons, which means the Lucerne Dredging Project alone is removing ~2% of the annual load limit of phosphorous for Clear Lake. Nutrients removed by dredging other areas can be quantified in a similar way as above.

Below is a table illustrating the load contributions from major tributaries into Clear Lake.

Table 3. Phosphorus load allocations for non-point sources.

Watershed Group	Existing TP Loading (kg/day)	% TP Loading to Clear Lake	TMDL Loading (kg/day)	Percent Reduction
Intermediates	126.04	23%	81.93	35%
Schindler	26.79	5%	21.43	20%
Scotts/Middle	169.55	30%	67.82	60%
Adobe	30.06	5%	22.55	25%
Cole	23.20	4%	18.56	20%
Kelsey	35.74	6%	26.80	25%
Total	411.39		239.10	

*Courtesy of Clear Lake Watershed Sanitary Survey Update 2017

Potential Project Partners:

The Clear Lake State park would like to partner, specifically related to dredging their channel (Cole Creek) to improve boat and fish passage. It is the intent that they be included as a project partner for that specific channel. They are interested in potentially leveraging some of their resources to partner on the project.

CDFW has been briefly introduced to the concept project and Fisheries Biologist, Ben Ewing responded saying: *"I believe when done correctly, that dredging stream mouths can be very beneficial, especially to hitch. Kelsey Creek, Schindler Creek, and Rodman Slough are all spots that I believe could use some help."* - Ben Ewing. It is the intention to collaborate with CDFW, not only from a permitting standpoint, but from a technical standpoint to ensure conservation benefits. Grant funding from CDFW will continue to be explored to enhance and expand the project.

The tribes around Clear Lake will also be integral to the project's success since a lot of earth will be moved and there is the potential to unearth cultural artifacts. Further, it would greatly enhance the project to incorporate tribal ecological knowledge into the project in relation to fish passage up various Clear Lake tributaries.

Project Timeline:

- **Year 1:** Planning and permitting, CEQA, outreach, Project Manager Onboarding.
- **Year 2:** Finishing permitting / required reports and soliciting an RFQ for dredging
- **Year 3:** Dredging contractor onboarding and implementation of dredging at various locations

Projected Budget:

- Overall budget request: \$2,500,000
 - Task 1: Project Management: \$200,000

- Task 2: Permitting and CEQA: \$135,000
- Task 3: Studies and Reporting: \$90,000
- Task 4: Surveying and Monitoring: \$50,000
- Task 5: Outreach Meetings / Materials: \$25,000
- Task 6: Dredge Implementation: \$1,500,000
- Task 7: Material Disposal: \$500,000

**Project scope can be reduced to address less areas if funding is limited.*

***Estimations were based on costs associated with the Lucerne Harbor Project and extrapolated for additional areas.*

Contact Information:

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Program Coordinator

Lake County Water Resources Department

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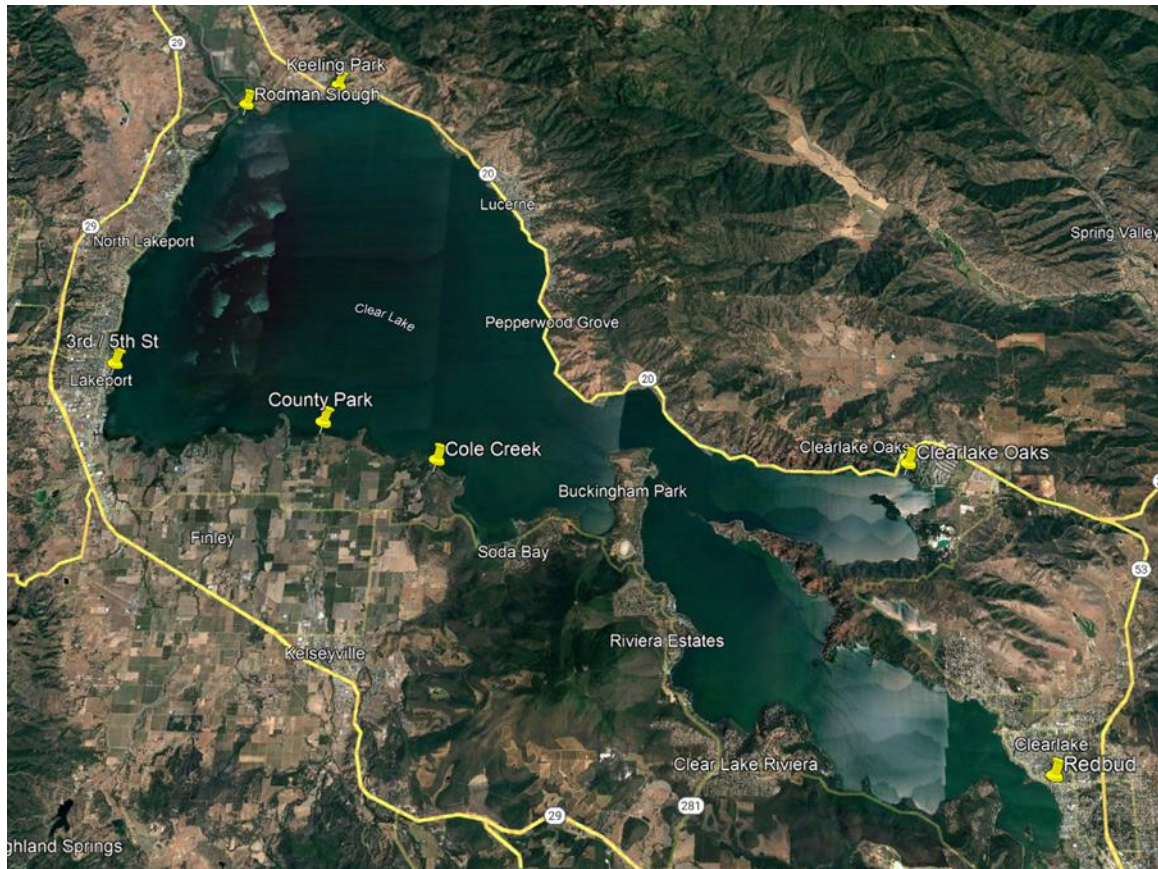
Office: 707-263-2344 Cell: 707-530-5014

Additional Information:

Rodman Slough Aerial



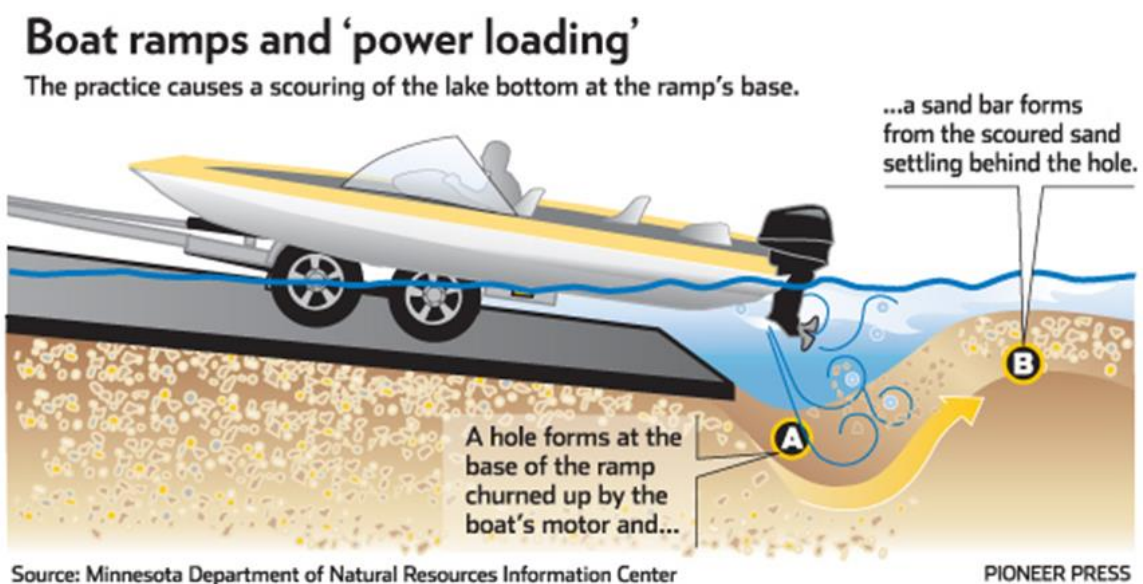
*Taken Aug 2022



*Potential Proposed Locations

*Bathymetric surveys already conducted in 2021 for 3rd St, 5th St, County Park, Clear Lake Oaks, and Redbud Ramps (too large to attach, contact via email to receive information)

Power Loading Example:



Required Permits Example:

Agency	Laws/Regulations	Permit, Approval or Authorization
U.S Army Corps of Engineers (USACE)	Clean Water Act (CWA) Section 404, 33 U.S.C 408, Rivers and Harbors Act Section 10	Regional General Permit
Central Valley Regional Water Quality Control Board (RWQCB)	CWA Section 401, 402, California Porter-Cologne Water Quality Control Act	Section 401 Water Quality Certification
City of Lakeport	City Code	Conditional Use Permit
City of Clearlake	City Code	Conditional Use Permit, Lakebed Encroachment Permit
County of Lake	County Code	
U.S Fish and Wildlife Service (USFW)	Endangered Species Act (ESA)	Determine ESA applicability in regards to take authorization
California Department of Fish and Wildlife (CDFW)	California Endangered Species Act (CESA) and California Fish and Game Code Section 1602 / 2081	Lake and Streambed Alteration Agreement
California Office of Planning and Research (OPR)	California Environmental Quality Act (CEQA)	File CEQA determination



March 20, 2023

Blue Ribbon Committee for the Rehabilitation of Clear Lake
California Natural Resources Agency
715 P Street, 20th Floor
Sacramento, CA 95814

Re: Letter of Support for Dredging of Boating Ways and Stream Mouths of Clear Lake

Dear Committee Members:

California State Parks, Northern Buttes District, supports the Lake County Watershed Protection District's proposed project to dredge boating ways and stream mouths of Clear Lake. As the managing agency of two of the largest public lands along Clear Lake's shoreline, Anderson Marsh State Historic Park and Clear Lake State Park, and as a potential beneficiary of the project, we recognize its significant positive influence on recreation, water quality, habitat restoration, and climate resilience that will help the Blue Ribbon Committee (BRC) achieve its mission.

Consistent with the vision and goals of the BRC, this multi-benefit project will address long-standing recreational boating access issues associated with the siltation of public launch ramps, remove legacy contaminants from the lake, and reestablish critical passageways for the Clear Lake Hitch, a species that is culturally significant to the many tribal communities around the lake which is also listed as a threatened species under the California Endangered Species Act.

We strongly encourage BRC's financial support of this project to realize large-scale, lake-wide benefits to the county's economy, the environment, local cultures, and adjacent communities, many of which are identified as economically disadvantaged. Please approve this project as presented by the Lake County Watershed Protection District.

Sincerely,

Matt Teague
District Superintendent
Northern Buttes District

Cc: Jared Zucker, District Services Manager